



EFFECTS OF SMALL SIDED CONDITIONING TRAINING PROGRAMME OF VARIOUS INTENSITIES ON HOCKEY SKILLS OF SCHOOL LEVEL PLAYERS

Mrs. Jyoti Jat¹ | Dr. Alka Nayak¹ | Dr. R.K Yadav²

¹ Sports Officer, Govt. M.K.B., Arts & Commerce, Autonomous College for Women, Jabalpur (M.P.).

² Dept. Physical Education, RDVV Jabalpur.

INTRODUCTION:

In recent years, along with the benefits of small-sided games (SSGs) found, as a specific tool SSGs are widely used in physical and technical trainings. In response to this, to improve the effects of application of SSGs, a comprehensive understanding for SSGs, such as, trainings form and scopes of application as well as the role in physical and technical training, should be emphasized in the round (Von, 2013).

According to Gabbett, Jenkins and Abernethy (2009), the SSGs as a means of training are to be used effectively for team sports. They also indicated that physical fitness, process of skills learning and ability of decision-making would be improved by SSGs. They suggest that game-based training session is a useful tool to improve skills of players.

It is indicated by Delta youth Soccer Association (2008,) that SSGs embrace the concept of fun and enjoyment, which is vital, if children are willing to develop a lifelong love for game sports. The rules of SSGs are similar to those in adult game sports. The exceptions are that the playing field is smaller and each team with fewer players. In terms of age groups, the size of pitch and the number of players as well as goal size, the forms of SSGs vary from 3 vs 3 to 8 vs 8 under age 12.

SSGs are game sports with fewer players competing on a smaller-sized field, and are modified forms of 11-a-side football. They are designed to meet the needs of players under the age of 13, who have very different developmental characteristics and needs from adult players. It's emphasized that SSGs have a special role for youth players, who are under 13. The idea of SSGs is focused on the satisfactions of desires and increases of enjoyment, in particular the age appropriate development (Football Federation Australia, 2011)

According to Tessitore et al. (2006) coaches can modify training intensity by varying pitch dimension, with smaller individual area having a large impact on metabolic demands of exercise. In this study, the exercise intensity ranged from 61% to 76% of the players maximal oxygen uptake, with lower values for the larger pitch. These results are similar to those obtained by Kelly and Drust (2008), as the authors did not find different heart rate responses between SSG played in three pitch dimensions. On the contrary, Rampinini et al. (2007) and Casamichana and Castellano (2010) found significant differences in heart rate responses between SSG played on pitches with different sizes. Higher HR values during SSG played on a large pitch were registered when compared to medium- and small-sized pitches.

Small area games also help to develop the player often ignored in practices - the goaltender. Increased puck touches for players results in increased scoring opportunities. This means a higher percentage of puck touches (saves) for the goaltenders. And because of space restrictions, the goalie is often called upon to make not only the first save, but also the second or even third. And goalies are no exception when it comes to learning best in game situations, except here they don't count in the standings. What a recipe for skill development and confidence building.

Hockey is a game of transition, and small area games teach players effective transitional play. They encourage players to be creative with their decision-making skills, and develop overall hockey sense. No matter what side of the puck they are on, players are required to read and react at a much quicker pace.

The small sided games program is ensuring that the appropriate energy systems are addressed via the utilization of the correct exercise intensities.

Low Intensity Training Games:

These involve moderate intensities of exercise, where heart rate is between 40-54% maximal heart rate. While some anaerobic bouts were present, as with all the games the main goal of this type of game was to stress the aerobic system. Therefore game duration was longer than for the higher intensity games.

Moderate Intensity Games:

Here the goal was to develop high end aerobic power Heart rates were higher than low intensity games, averaging 55-69% MHR, work duration was shorter than for low intensity games and vary between two to five minutes.

High Intensity Games:

Here the goal was to train repeat sprint ability. Work intensity was very high averaging 70% or more of MHR for the duration of the game. Games were two minutes less in duration than moderate intensity games, and involve high intensity bouts of activity interspersed with short periods of active recovery within the game. This was simulate the highest intensities experience during periods of a field hockey match.

Table 1:
Target Heart Rates in Various Intensities

Type of Game	Percent of Maximum Heart Rate	Single Game Duration	Work to Rest Ratio
Low Intensity	40-54% MHR	5-10 minutes	1:0.5-1
Moderate Intensity	55-69% MHR	2-5 minutes	1:1-1.5
High Intensity	70% + MHR	Up to 2 minutes	1: 1.5-3

METHODOLOGY:

Ninety Inter school-level male Hockey players of 14 to 16 years of age, studying in different schools of Jabalpur, who have been playing for their schools for last two to three years were randomly selected. All the subjects were randomly divided into three groups (N=30), group (a) was trained through small area hockey games with high intensity (70%+) MHR, group (b) was trained through small area hockey games with moderate intensity (55-69%MHR) and the last group (c) was trained through small area hockey games with low intensity (40-54% MHR) on alternate days for 12 weeks.

The subjects were tested on Shooting Ability (Harban's Singh Hockey Test), dribbling and passing on move tests. The subject were tested on all the variables prior to starting the experiment and finally after the completion of experimental period of 12 weeks. Descriptive statistics (mean and SD) and analysis of covariance were computed on pre test and post test scores of each variables. In case of significant differences were obtained on final adjusted post test means, post-hoc analysis was carried out to find out the significance of difference between adjusted paired mean scores. The level of significance was set at .05 level and data has been presented in table 2 to 5 and depicted in figure 1 to 3.

Selection of Variables:

Based on review of available literature, discussion with supervisor, the current research in the area and the feasibility criteria the following variables were identified for the present study.

Skill Performance Parameters:

1. Passing on move
2. Dribbling
3. Shooting

Statistical Analysis of Data:

In order to compare the effectiveness of small area hockey games played with different intensities, the obtained data on skills variables were subjected to descriptive analysis and One Way Analysis of Co-Variance (ANCOVA). In case of significant F-ratios, the Pair-wise Comparison Test of Post hoc analysis was used to find out the difference of significance between the groups. The level of significance was set at 0.05 level of confidence.

Table 2:
Analysis of Co-Variance of Experimental Groups Trained with Different Intensities on Dribbling Performance.

Means	High Intensity Group	Moderate Intensity Group	Low Intensity Group	Source of Variance	Sum of Squares	df	Mean Sum of Squares	F
Pre-Test Means	1.966	2.1	1.74	Between Groups	2.489	2	1.244	1.203**
				Within Group	89.967	87	1.034	
Post-Test Means	3.067	3.867	3.400	Between Groups	8.241	2	4.121	3.314*
Adjusted Means	3.044	3.776	3.514	Within Group	106.945	86	1.244	

*Significant at .05 level **insignificant at .05 level
F.05 (2,86) = 3.10

Analysis of covariance on dribbling test scores of different experimental groups in table 2 indicated an insignificant difference among pre test mean scores ($F=1.203$) and significant post means and adjusted post mean difference among the groups. As the obtained F ratio (3.314) was high than the F value (3.10) required to be significant at .05 level with 2,86 df.

As there was a significant difference among adjusted final means of different experimental groups on dribbling skills of subjects, pair wise comparisons were made to find out the significance of difference between pairs of experimental groups. The data has been presentation in table 3.

Table 3:
Significance of Difference Between Adjusted Paired Final Means of Experimental Groups Trained on Different Intensities on Dribbling Performance

Groups			MD	CD
High Intensity Group	Moderate Intensity Group	Low Intensity Group		
3.044	3.776	-	.732*	.572
-	3.776	3.514	.262	
3.044	-	3.514	.470	

*Significant at 0.05 level

Analysis on adjusted paired means scores of experimental groups in table 3 revealed significant difference between high intensity groups and moderate intensity group (.732) only. Differences between the moderate intensity group with low intensity group (.262) and high intensity group with low intensity (.470) was found to be insignificant. Improvement was observed only in moderate intensity training group.

The group trained on moderate intensity small area games performed better (μ 3.776) followed by subjects trained with low intensity and high intensity small area games.

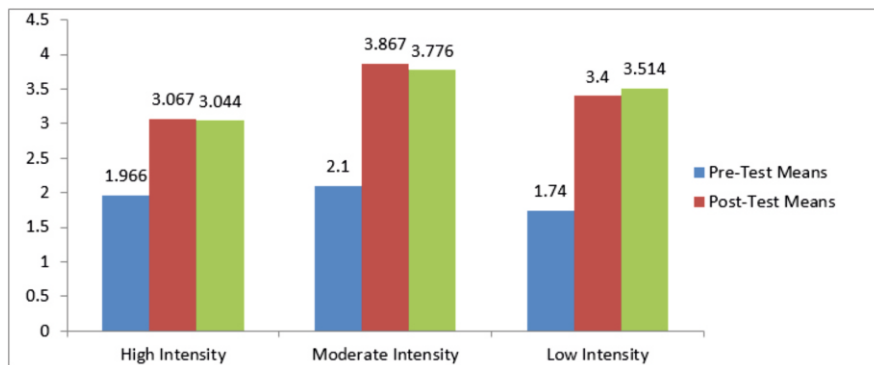


Figure 1: Pre Test, Post test and Adjusted Post Test Mean for Experimental Groups Trained with Different Intensities on Dribbling the Ball.

Shooting:

The data obtained on Shooting ability as obtained through Harban's Singh Hockey Test for different experimental groups were analyzed using Analysis of Co-variance and data has been presented on table 4.

Table 4:
Analysis of Co-Variance for Experimental Groups Trained with Different Intensities on Shooting.

Means	High Intensity Group	Moderate Intensity Group	Low Intensity Group	Source of Variance	Sum of Squares	df	Mean Sum of Squares	F
Pre-Test Means	12.4	14.8	15.233	Between Groups	139.756	2	69.878	2.555**
				Within Group	2379.367	87	27.349	
Post-Test Means	17	16.1	15.733	Between Groups	71.862	2	35.931	1.071**
Adjusted Means	17.545	15.895	15.393	Within Group	2884.26	86	33.538	

**insignificant at .05 level
F.05 (2,86)= 3.10

Analysis of covariance on shooting ability test scores of different experimental groups in table 4 indicated insignificant difference among pre test mean, post test mean and final adjusted post test mean scores of different experimental groups. Indicating that irrespective of training intensity, the training by small area games of Hockey does not improve the shooting ability of subjects of the study.

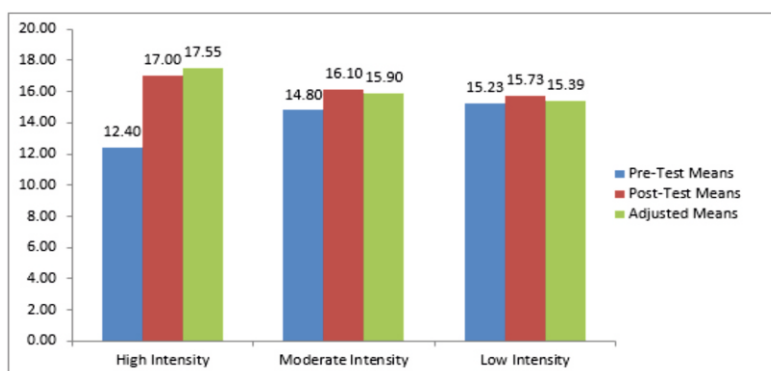


Figure 2: Pre Test, Post Test and Adjusted Post Test Mean for Experimental Groups Trained with Different Intensities on Shooting.

Passing on Move:

The data obtained on passing on move for different experimental groups were analyzed using Analysis of Co-variance and data has been presented on table 5.

Table 5:
Analysis of Co-Variance for Experimental Groups Trained with Different Intensities on Passing on Move.

Means	High Intensity Group	Moderate Intensity Group	Low Intensity Group	Source of Variance	Sum of Squares	df	Mean Sum of Squares	F
Pre-Test Means	1.833	1.700	1.3667	Between Groups	3.467	2	1.733	1.353**
				Within Group	111.433	87	1.281	
Post-Test Means	4.1667	4.2667	4.233	Between Groups	.250	2	.125	.304**
Adjusted Means	4.148	4.254	4.265	Within Group	35.398	86	.412	

** insignificant at .05 level
F .05 (2,87) = 3.10

Analysis of covariance on passing on move test scores of different experimental groups in table 5 indicated insignificant difference among pre test mean, post test mean and final adjusted post test means scores of different experimental groups. Indicating that irrespective of training intensity, the training by small area games of Hockey does not improve the passing on move skill of subjects of the study.

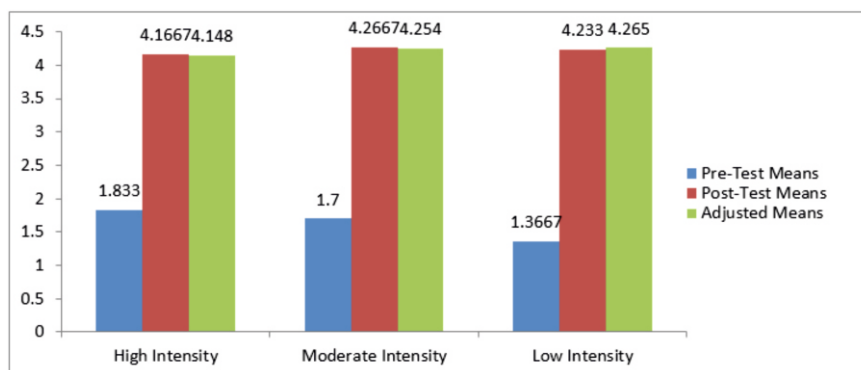


Figure 3: Pre Test, Post Test and Adjusted Post Test Mean for Experimental Groups Trained with Different Intensities on Passing on Move.

CONCLUSION:

Finding on the effect of training with small area Hockey games of different intensities on Hockey skill produced mixed results. Though all the experimental groups gained dribbling skill of Hockey players but players trained with moderate intensity were significantly better than groups trained with high or low intensity small area Hockey games.

- Twelve weeks of planned and systematic training programme consisting of small area Hockey games played at high intensity improved the dribbling performance of hockey players where as small area Hockey games played at low and moderate intensity improved the dribbling performance of the subjects but the improvement was not statistically significant.
- Twelve weeks of planned and systematic training programme consisting of small area Hockey games played at high, moderate and low intensities did not improve the shooting ability of the Hockey players.

- Twelve weeks of planned and systematic training programme consisting of small area hockey games played at high, moderate and low intensities did not improve the passing on move skill of the hockey players.

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